

PROCEEDINGS  
OF THE  
BIOLOGICAL SOCIETY OF WASHINGTON

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NOTES ON CHILOPODS AND DIPLOPODS FROM  
BARRO COLORADO ID., AND OTHER PARTS OF THE  
CANAL ZONE, WITH DIAGNOSES OF NEW SPECIES.

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In recent months there have come into the author's hands several small collections of chilopods and diplopods from Barro Colorado Id. In 1923 Mr. James Zetek, specialist in tropical insects of the United States Bureau of Entomology and the man primarily responsible for the move which resulted in the setting aside of Barro Colorado as a Natural Park, sent in several forms from the island with material taken from termite nests from various other points in the Canal Zone. In the spring of 1924 Prof. W. C. Allee made a collection on the island in conjunction with his ecological studies. During the following summer Nathan Banks also collected a considerable number of these organisms incidentally to collecting in his own special lines. Although these collections obviously represent but imperfectly the myriopod fauna of the island, they are sufficient to indicate clearly that the fauna is largely peculiar in comparison with those previously made known from the Central American region and that it is essentially South American in its character. While most of the species are new, it seems desirable because of the importance this region is likely to assume in biological work to list the known forms in these collections along with the diagnoses of the new ones. The types of the new forms are in the Museum of Comparative Zoology.

CHILOPODA.

CRYPTOPIDAE.

*Cryptops zeteki*, sp. nov.

Cephalic plate with paired longitudinal sulci which extend forward only a short distance from caudal margin. Cervical groove of first dorsal plate

pronounced, angled at the middle; the paired longitudinal sulci furcate at anterior ends behind the cervical groove which they do not cross. Prosternal margin straight or a little convex at middle, not at all doubly convex or mesally notched; marginal setae very small, 2+2. Last ventral plate with sides convex converging caudad, the caudal corners strongly rounded and the caudal margin convex. Coxopleurae convex caudally, not at all produced. The femur of anal legs wholly lacks teeth, bearing merely short epinescent setae which leave no naked ventral area. Tibia with a single ventral tooth, this near the beginning of the distal fourth of length. Metatarsus with five or six seriate teeth ventrally. First tarsal joint with three teeth. None of the joints of anal legs with dorsal tooth. Anterior tarsi not biarticulate.

Length, 19 mm.

*Locality*.—Panama: Largo Remo Id. Two specimens, of which one is not fully grown and lacks the anal legs, taken 31 Aug., 1923, in nest of *Microtermes panamensis* Snyder. Zetek and Molino.

#### **Cryptops, sp.**

Too immature for specific determination.

*Locality*.—Barro Colorado Id. One specimen taken in nest of *Obtusitermes biforma* Snyder, 22 Aug., 1923, by Zetek.

#### **Cryptops floridanus, sp. nov.**

Cephalic plate not sulcate. First dorsal plate with cervical groove strongly angled at middle, the angle in a depression; paired longitudinal sulci furcate anteriorly, their inner branches uniting before reaching the cervical groove. Sulci of succeeding tergites complete. Prosternal margin slightly notched at the middle; marginal setae weak, 3+3 or 4+4. Last ventral plate with sides converging caudad, corners rounded, the caudal margin nearly straight. Anal legs much as in *C. zeteki*, but with only two teeth on first tarsal joint; tibia with spiniform setae on the mesal surface and mesoventral ridge, but with only ordinary hairs on the ventral surface proper where some spinescent setae are present in *zeteki*. Anterior tarsi not biarticulate.

Length, 16 mm.

*Locality*.—Florida: Sebastian, one specimen, 2 Nov., 1919; Paradise, one younger specimen, 21 Feb., 1919.

Distinguishable from preceding species in lacking paired sulci across caudal border of head and in characters of anal legs.

#### OTOSTIGMIDAE.

#### **Rhysida nuda (Newport).**

*Locality*.—Panama: Ancon. One individual taken 1 June, 1923, by Zetek and Molino in the termitarium of *Leucotermes tenuis*.

This species is widely distributed, occurring in America from Mexico to Paraguay, and also in Australia, Ceylon, and various parts of the East Indian region.

SCOLOPENDRIDAE.

**Cupipes unguulatus** Meinert.

*Localities*.—Barro Colorado Id. Several specimens taken by Zetek in termitarium of *Eutermes* sp., 23 Aug., 1923, and by Banks in June and July, 1924; also one specimen in rotten wood near headwaters of Rio Chinilla taken by Molino, 27 Aug., 1923.

This species is known also from the West Indies and Brazil. It seems to be common throughout Panama.

**Scolopendra sumichrasti** Saussure.

*Locality*.—Panama: Balboa, Florence Id. One specimen taken by Zetek.

A species previously known from Mexico, Guatemala, and British Honduras.

SCUTIGERIDAE.

**Pselliodes**, sp.

Too young for specific determination.

*Locality*.—Barro Colorado Id. One specimen taken by Banks, 15 July 1924.

ORYIDAE.

**Orphnaeus brevilabiatus** (Newport).

*Localities*.—Barro Colorado Id., one specimen taken by Allee, and one by Banks, 2 Aug., 1924; Frijoles, one specimen taken by Wheeler and Zetek, 14 Mar., 1923, and three by Wheeler and Molino, 28 Mar., 1923, in termitarium of *Nasutitermes colombicus* Holmgren; Rio Aojeta, one specimen taken by Zetek 19 Aug., 1923, in termitarium of *Anoplotermes parvus* Snyder; Punta Paitilla, near Panama City, two specimens taken from *Tillandsia* sp., by Zetek, 2 Mar., 1923.

CHILENOPHILIDAE.

**Suturodes tardus** Chamberlin.

*Locality*.—Barro Colorado Id. Five specimens taken by Allee, 1924, and one by Banks, 2 Aug., 1924.

The species was previously known only from Honduras. The specimens from Barro Colorado Id. present slight differences from the types, but these are apparently due in part to differences in age and in part to local variation of less than subspecific importance.

DIPLOPODA.

PLATYDESMIDAE.

**Platydesmus nicaraguanus**, sp. nov.

The color at present is brown, without a median longitudinal stripe, but the color may have been modified by long preservation. Body moderate

in width, being nearly four times longer than wide. The first tergite does not completely cover the head from above; its anterior border is widely emarginate and is deeply notched at middle, the notch rounded at the bottom. Of the two rows of tubercles present on the tergites the anterior row extends laterad nearly to ends of keels, the posterior row much shorter.

Length, 15 mm.; width, 4 mm.

*Locality*.—Nicaragua: One specimen.

#### STEMMIULIDAE.

##### *Stemmiulus bioculatus* Gervais.

*Locality*.—Barro Colorado Id. Five females taken by Allee and one by Banks, 1924.

Without reexamination of the type it is impossible to be wholly certain that these specimens represent the same species as Gervais had; but the fact that the type was from Panama makes the identity very probable.

#### SPIROSTREPTIDAE.

##### *Orthoporus canalis*, sp. nov.

General color fuscous, lighter below, the caudal portion of each segment ferruginous, more yellow adjacent to margin. Last segment lighter brown. Legs yellowish. Collum on each side with five complete striae and a shorter curved one between the two uppermost of these; not prominent ridge below the uppermost stria. Segments wholly smooth above in front of sulcus, but behind the sulcus strongly longitudinally ridged. Last tergite not covering the anal valves above; surface densely punctate, the caudal angle set off by a curved sulcus. Anal valves also punctate, otherwise not roughened. In the anterior gonopods the posterior lamina is expanded and rounded at its distal end is extended into a process on ectal side which is short and slender, much as in *O. cordovanus* but with the process more slender.

Number of segments, 60.

Length, about 56 mm.; width, 3.5 mm.

*Locality*.—Barro Colorado Id. One male taken 12 July, 1924, N. Banks.

##### *Orthoporus nicaraguanus*, sp. nov.

Fuscous or black, with posterior portion of segments ringed with ferruginous. Legs light brown. Collum strongly inflexed below; with six or seven longitudinal striae, a ridge-like elevation below the uppermost of these, this stria at its anterior end bending up dorsad parallel with anterior margin of plate. Segments above wholly without rugae either behind or in front of the sulcus, minutely and not densely punctate, otherwise smooth and shining. Last tergite much exceeded by the strongly compressed valves, not transversely furrowed. Readily recognizable by the form of the gonopods of male. In these, e. g., the posterior lamina of the anterior pair is truncate at distal end and is extended ectad, with a large spinous process extending a little ectad of proximad from this lateral end.



Number of segments, 52.

Width, 5.2 mm.

*Locality*.—Nicaragua. One male broken into sections.

***Diaporus barroensis*, sp. nov.**

Light brown in general color, the segments somewhat ferruginous brown back of the sutures; repugnatorial glands showing as a series of small dark dots along the sides, the body below the level of the series lighter than above; last segment paler than the preceding ones. Legs light ferruginous. Collum strongly inflexed below, the inflexed wing almost at right angles to side of plate; crossed on each side by five sulci, a prominent smooth ridge separating the upper two. Dorsally the segments are densely punctate behind the segmental suture, punctae being weaker immediately in front of the suture and absent further forward; surface above otherwise not at all roughened, smooth and shining. Last dorsal plate a little exceeded by the anal valves, very obtusely angled behind, the caudal portion set off by a pronounced and rather long transverse furrow behind which it is depressed; surface finely punctate similarly to metazonites of preceding segments. Anal valves also similarly punctate.

Number of segments, 50–53.

Length, about 47 mm.; width, 4 mm.

*Locality*.—Barro Colorado Id. One female taken 22 Aug., 1923, by Zetek and Molino; one immature specimen taken by Allee; and three adult females taken by Banks in July, 1924.

RHINOCRICIDAE.

***Rhinocricus insulatus*, sp. nov.**

Head dilute ferruginous brown. Collum dark anteriorly, lighter, dilute ferruginous, posteriorly. Exposed portion of prozonites black above, areolated below and becoming thus much lighter ventrally. Metazonites ferruginous, more yellowish brown adjacent to suture. Last tergite dark, almost black except caudal margin. Anal valves of similar color. Legs brown of ferruginous cast. Head smooth and shining; sulcus obscure or interrupted at level of lower portion of eyes. Sensory cones of antennae four in number. Collum smooth and shining, widely rounded below. Second tergite extended below level of collum, lower margin nearly straight, neither excavated nor angulate. Segmental sulcus complete on second and following segments. Segments smooth and shining, striate only below. Anterior impression of scobina deep, transversely elliptic, the impressions widely separated from each other; the posterior, striate area pointed behind. Scobina extending to near the thirty-sixth segment, becoming gradually indistinct. Anal tergite a little surpassing the valves. Anal scale triangular. Posterior gonopods in male with telopodite of the typical biramous form; the broader branch blade-like, not triangular but of nearly uniform width, exceeding the stulus.

Number of segments, 45–46.

Length, 40 mm.; width, 3.5 mm.

*Locality.*—Barro Colorado Id. Two males and nine females taken by W. C. Allee, three females taken by Banks in July, 1924, and six females taken by Zetek and Molino in August, 1923.

***Oxygyge benedictus*, sp. nov.**

Dark brown, nearly black, a narrow caudal border on each segment paler. Legs ferruginous yellow. Head smooth and shining; sulcus widely interrupted in frontal region. Sensory cones of antennae numerous. Segmental sulcus distinct throughout, sharply angled at level of pore which it embraces; in front of sulcus a supplemental sulcus across dorsum. Scobina with anterior impression deep, marginal in position and commonly appearing like excavations in border; striate area short, pointed behind; scobina about twice their greatest width apart. Last tergite acutely pointed behind, exceeding the valves exclusive of their processes, but the latter passing beyond it and curving up behind it.

Number of segments, 45.

Length, about 32 mm.; width, 3.2 mm.

In the telopodite of posterior gonopods the major branch is bent almost at right angles to the principal axis, of nearly uniform width over much of length, with a spinous process from lower angle, the stylus parallel with major branch which exceeds it.

*Locality.*—Barro Colorado Id. One male and one female collected by Allee, 1924.

***Oxygyge isolatus*, sp. nov.**

Prozonites pale brown, the metazonites black except the pale caudal border, the black encroaching on prozonites dorsally, especially on the more caudal segments. Antennae and legs ferruginous. Head smooth and shining; sulcus interrupted as usual. Sensory cones of antennae numerous. Segmental sulcus sharply impressed throughout. Prozonite covered with transverse striolae which are wavy and branch to a limited extent. Scobina relatively much smaller than in the preceding species; anterior impressions lunate, the striate area strongly narrowed behind and its sides incurved; scobina four or five times their width apart. Last tergite acutely pointed behind, equalling the valves exclusive of their processes, the latter extending caudad much beyond it. Telopodite of male gonopods with branches of same general type as in *benedictus*.

Number of segments, 49.

Length, 42 mm.; width, 4.2 mm.

*Locality.*—Barro Colorado Id. One male and one female taken by Allee.

***Zipyge*, gen. nov.**

The Panamic species of *Oxygyge* sens. str., so far as known, have short thick antennae bearing numerous sensory cones at the end. It is thought proper to separate the Guatemalan species described by the author (Proc. U. S. National Museum, 1922, 60, art. 8, p. 27 et seq.) as a distinct genus

characterized by having more slender antennae bearing only four sensory cones.

*Genotype*.—*Zipyge ferruginipes* (Chamberlin).

#### SPIROBOLELLIDAE.

##### **Barrobolus**, gen. nov.

Differing from *Microspirobolus* in having the telopodite of the posterior gonopods distally biramous, with one of the branches again typically partite. Also differing in the anterior gonopods in having the sternite smaller, much exceeded by the coxoids which are distally pointed and are notched below free end on ectal side.

*Genotype*.—*Barrobolus grammicus* sp. nov.

##### **Barrobolus grammicus**, sp. nov.

Body in general blackish brown, with two broad yellow stripes along the dorsum, the lower part of sides and the venter also yellowish. Legs dusky yellow. Collum narrowly rounded on each side below. Segments of body conspicuously constricted at level of segmental suture, the furrow crossed by longitudinal raised lines. Last tergite caudally rounded, exceeded by the valves. Valves smooth, not compressed. Anterior gonopods of male with sternite acutely narrowed distad; telopodite slender, exceeded by the coxoid. In the telopodite of the posterior gonopods the superior distal branch is constricted at base and strongly expanded distad, its inner or mesal angle prolonged into a slender process that curves proximad distally and sends off at the curve a short process; the inferior (mesal) branch is tripartite, with the inner finger longest, the middle one shortest, the ectal one bent towards its end.

Number of segments, 33.

Length, about 12 mm.

*Locality*.—Barro Colorado Id. One male taken 20–24 June, by Banks.

#### EURYURIDAE.

##### **Aphelidesmus panamicus**, sp. nov.

Deep chocolate brown to black along sides of dorsum and across prozonites, the dark color in the latter extending down sides below level of keels, the mid-dorsal region otherwise and the keels yellow. Sides dilute chocolate brown on upper part of prozonites and on metazonites just below keels, otherwise yellow like the venter. Legs yellow. Collum yellow in middle in an area widest caudad and not fully reaching the anterior margin. Head blackish. Antennae with two first joints yellow, the others brown. Last tergite yellow excepting on sides of basal part.

Length, 46 mm.; width, 7 mm.

*Locality*.—Panama: Canal Zone near headwaters of Rio Chinilla. One female with eggs taken in log by Zetek, 19 Aug., 1923.

## LEPTODESMIDAE.

**Chondrodesmus panamenus**, sp. nov.

Dorsum and sides dark chocolate brown to black, the keels light brown to yellow. A yellow spot on each prozonite and one just behind it on anterior part of metazonite in middorsal line. Legs light brown to yellow. Head dark chocolate brown. Antennae yellow. Keels all well developed, moderately wide. In the anterior and middle regions of the body the anterior corner of keels rounded and the posterior corner in the first ones subrectangular and farther back becoming a little produced caudad; lateral margin wholly untoothed, notched in front of pore-swelling on porigerous segments; posterior margin with a single tooth. On the seventeenth, eighteenth, and nineteenth keels the posterior corners are more strongly produced caudad, but the nineteenth keels are reduced in size, the tooth of posterior margin in these segments situated on mesal side of process.

Length, 68 mm.; width, 11.5 mm.

*Locality*.—Barro Colorado Id. One female taken by Allee, and two females by Banks, July, 1924.

**Chondrodesmus atrophus**, sp. nov.

The metazonites yellow throughout; the prozonites red across dorsum and upper part of sides but the red band interrupted on the middorsal line and at the level of the keels on each side. Cauda yellow, the proximal portion of segment red. Legs yellow. Contrasting strongly with the preceding form in the great reduction of the posterior keels. Anterior keels normally developed, their anterior corner prominent and with a slight tooth on ectal side. Ectal margin deeply notched in front of the proigerous swelling. In the posterior region the keels are very narrow, anteriorly rounded and but little raised from level of segment; one tooth on posterior margin.

Width, 5.8 mm.

*Locality*.—Canal Zone: Ft. Sherman. One not quite adult female taken 3 July, 1924, by Banks.

**Chondrodesmus panamenus** Chamberlin.

*Locality*.—Barro Colorado Id. Three females collected by Allee and two by Banks.

These specimens conform to the types of the species, but are larger and the body is darker, with the legs in part of reddish cast.

**Trichomorpha nidicola**, sp. nov.

Dorsum in general brown, with the metazonites behind the sulcus and the keels excepting anterior corners yellow; a pale middorsal line and a pale line in constriction between prozonite and metazonite. Sides of body brown below level of keels. Venter yellow. Dorsum but little convex, the keels nearly horizontal. Dorsum of segments smooth, or with a few longitudinal impressed lines or rugae behind the suture but no definite tubercles or areas; sulcus deeply impressed. Posterior angles of collum a



little produced, those of all other tergites strongly so, acute. Caudomesal margins of processes of keels toothed, the teeth prominent and from four to six in number.

Length, near 18 mm.; width, 2.9 mm.

*Locality*.—Barro Colorado Id. One female taken in its mud nest by Allee.

#### ***Trichomorpha panamica*, sp. nov.**

Keels yellowish or light brown, the rest of the dorsum as well as the sides of the body solid black. Legs pale brown or in part yellow. Metazonites depressed along sulcus smooth, without raised areas or tubercles. Keels elevated, prominent, the processes large, the outer margin running ecto-caudad at a prominent angle with the axis of the body, usually with three small teeth with a seta behind each one. Mesocaudal edge of processes toothed, but the teeth less uniform than in *nidicola*. Three to five teeth on this margin, the anterior ones commonly reduced; on caudal margin of keel mesad of process often several small additional teeth, the total number of teeth being sometimes as many as nine. The tarsal pads on anterior legs of male unusually small.

Length, about 30 mm.; width, 3.8 mm.

*Locality*.—Barro Colorado Id. One male and one female taken 1 Aug. and 24 June, 1924, by N. Banks and several females taken by Allee earlier in the year.

#### ***Trichomorpha recta*, sp. nov.**

Dark chocolate brown, uniform, the keels no lighter excepting the tips of their processes. Keels horizontal, rather narrow, with outer margin nearly parallel with the axis of body. Second and third keels with two lateral teeth of which the anterior one is at the anterior corner. Posterior processes of keels comparatively short. Caudal margin of keel toothed only in angle at base of process and mesad of this, the teeth small. Dorsal surface of metazonites wholly smooth, the sulcus deep.

Length, 24 mm.; width, 3.1 mm.

*Locality*.—Barro Colorado Id. One female taken 1 Aug., 1924, by Banks.

#### ***Trichomorpha extrema*, sp. nov.**

Light brown, the lateral margin of keels and the posterior processes yellowish. Keels horizontal or somewhat raised above level of dorsum. They much resemble those of *recta* but are obviously broader and in particular the outer margin is more strictly parallel with axis of body and it is straighter, this margin in *recta* being obviously convex between the anterior tooth and the caudal angle. The second, third and fourth keels with two lateral teeth, the others with only the one at anterior corner. Caudal margin of anterior keels not toothed, but in the posterior keels this margin is irregularly denticulate mesad of the process the margin of which is always smooth. The processes of keels are proportionately clearly longer than in *recta*.

Length, 18 mm.; width, 2.8 mm.

*Locality.*—Barro Colorado Id. One specimen taken 2 Aug., 1924, by Banks.

XYSTODESMIDAE.

*Rhysodesmus mayanus*, sp. nov.

Original color probably altered. At present light brown, the metazonites paler than prozonites and the keels yellow. Collum narrowed on each side, with anterior margin of angle convex and the posterior margin straight. Dorsum but little convex, much as in an ordinary *Polydesmus*. Second and third keels bent forward. Keels in general of moderate width; lateral margin thickened and raised, the pore-swelling elongate; smooth, without teeth or indentations; anterior corner rounded; posterior angles in middle and posterior regions produced caudad. Ventral branch of gonopods cylindrical over the first two-thirds of length and then abruptly narrowed to a slender blade which curves cephalomesad and at tip a little dorsad, meeting the other gonopod at the middle line; at apex a little expanded, with an angle directed cephalad; basal division setose. Dorsal branch of gonopod straight, distally acute, extending forward a little distance beyond base of terminal blade of ventral branch.

Width, 6.2 mm.

*Locality.*—Yucatan. One male taken from the stomach of a toad.

SPHAERIODESMIDAE.

*Sphaeriodesmus conformans*, sp. nov.

General color of dorsum yellowish, darkened on the sides. Second and third keels slender, the third decidedly longer than the second. The fourth keels much longer as usual, somewhat broader at base than distally, the anterior margin at distal end convex, the corresponding posterior margin concave, the keel moderately curving backward toward end. The fifth keel no narrower than the fourth, the free end almost even rounded. In the male the first legs are enlarged and the femur has a prominent setiferous tubercle toward proximal end. In the gonopods the coxa is stout, narrowing distad to base of telopodite; telopodite long and slender, curving ventrad distally, with a narrower, short distal division which has a retrorse barb at end; the telopodite setose to base of this distal division; telopodite without branch or process.

Length, 13 mm.; width, 4.5 mm.

*Locality.*—Barro Colorado Id. One male taken 15 July, by Banks.